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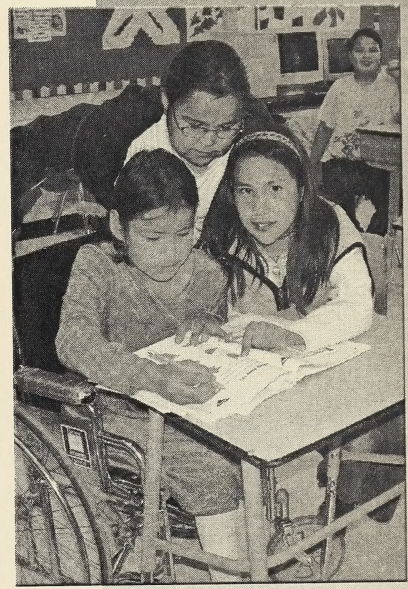
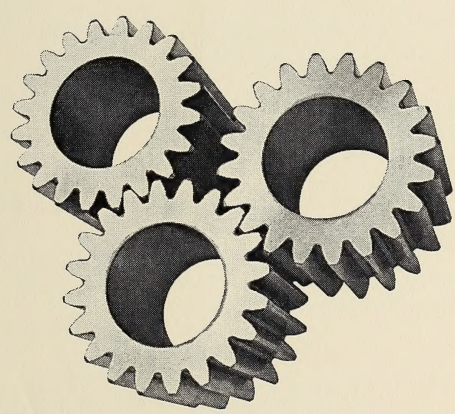
Mathematics

Module 4

Super Shapes



Home Instructor's Guide: Days 1–9
and
Assignment Booklet 4A



Grade Two Mathematics
 Module 4: Super Shapes
 Home Instructor's Guide: Days 1–9 and Assignment Booklet 4A
 Learning Technologies Branch
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This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	



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Module 4: Super Shapes

Introduction

Studying geometry is an opportunity for the student to connect mathematics to the environment. Many familiar objects in the student's world, such as cereal boxes, ice cream cones, dice, pop cans, and so on can be described in terms of geometric solids. In this module, the student gets to know about the objects in the world by exploring and discovering three-dimensional solids and how they relate to two-dimensional shapes.

It is important that the student have access to a set of geometric solids. Many educational book stores will have geometric solids or a set can be purchased from the Learning Resource Centre (LRC) of Alberta Learning. As well, find objects in the home and student's environment that have geometric shapes (these are listed in the Materials You Need section).

To reinforce geometric shapes throughout the module, look with the student for 2-D and 3-D shapes in the environment. Point out shapes in nature, in the grocery store, in the house, the doctor's office, and other places the student may go. When outside, encourage the student to look for shapes in leaves, flowers, buildings, insects, and so on.

Materials You Need

- a set of geometric shapes (in the Appendix)
- a set of geometric solids
- shapes found in the home
 - boxes of various sizes and shapes (tissue box, shoe, etc.)
 - cans
 - balls (table tennis, rubber, tennis)
 - ice cream cones
 - containers (milk carton)
 - dice
 - rolls (toilet paper, paper towels)
 - buttons
 - cubes (sugar, alphabet)
- coffee stir sticks, bamboo skewers (with the sharp ends cut off), or toothpicks
- marshmallows, plasticine, or playdough

- pipe cleaners
- masking tape
- geoboard
- pattern blocks or cutouts from the Appendix
- construction paper or heavier paper

- material in the Appendix

Have these materials cut out and ready to use. Place these items in the Student Folder.

Daily Summary

Day 1

Today is a review of Module 2.

Answers

1. a. yes
b. no
2. a. no
b. yes
3. a. 6
b. 2
c. 62
4. a. 4
b. 7
c. 47
5. a. 8 tens, 7 ones, 87
b. 5 tens, 6 ones, 56
c. 9 tens, 8 ones, 98
6. a. 56
b. 4, 16

c. Accept any of these combinations:

- 3 and 26
- 2 and 36
- 1 and 46
- 56 ones

d. 5 and 6

7. a. 72

b. 5, 22

c. Accept any of these combinations:

- 4 and 32
- 3 and 42
- 2 and 52
- 1 and 62
- 72 ones

d. 6 and 12 or 7 and 2

8. a.

Tens	Ones	Number
3	30	60
4	20	60
1	50	60
6	0	60

c.

Tens	Ones	Number
3	47	77
4	37	77
5	27	77
2	57	77

b.

Tens	Ones	Number
1	39	49
3	19	49
4	9	49
2	29	49

d.

Tens	Ones	Number
7	11	81
8	1	81
3	51	81
5	31	81

9. a.

Number	Rounded To
43	40
81	80
19	20
96	100
67	70

b.

Number	Rounded To
21	20
34	30
53	50
78	80
7	10

- c. A number is rounded by bringing it to its nearest ten.
d. A number with 5 in the ones place will round to the larger ten.

10. a.

Number	Rounded To
55	60
62	60
85	90

b.

Number	Rounded To
95	100
24	20
35	40

11. 65, 66, 67, 68, 69, 71, 72, 73, 74

12. a. 51 c. 63
b. 13 d. 63, 51, 13

13. a. 19 c. 20
b. 15 d. 15, 19, 20

14. a. The student should draw any picture that shows 7 tens and 3 ones.

b.

Tens	Ones
7	3

- c. 7 tens 3 ones
d. 73
e. tens
f. ones

15. 11, 13, 18, 33, 50, 62, 79

16. 88, 86, 42, 16, 9, 7

Day 2

This is a review of the names of 2-D shapes. If there is time at the end of the class, have the student do the extension activities. Activity 1, working with the geoboard, is good practice for the student.

Day 2: Lesson 2

The term **two-dimensional** is reviewed. Discuss this term with the student until you are sure it is understood. Tell the student that *dimension* means something that can be measured. A 2-D object can be measured in two ways (length and width).

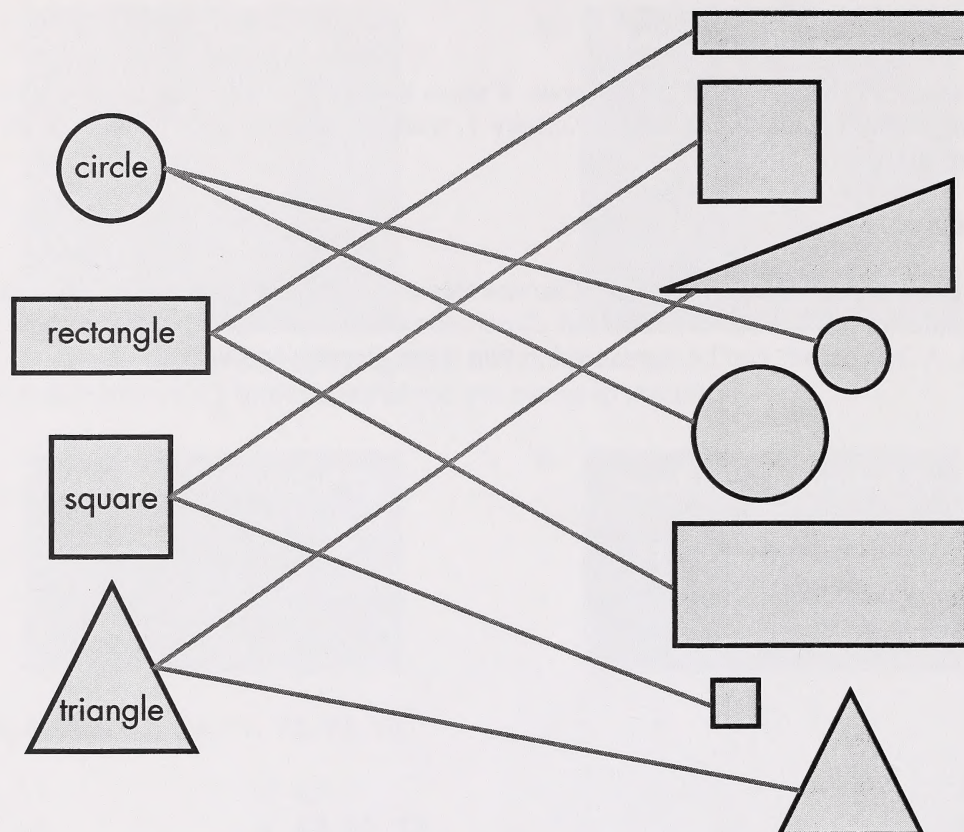
Answers

1. 16 cm
2. 4 cm
3. Yes, it can be measured two ways.

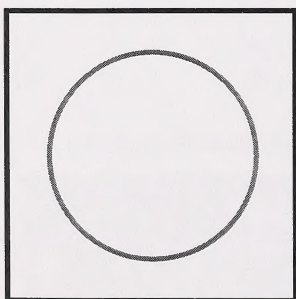
Day 2: Lesson 3**Answers**

1.
 - a. 4
 - b. yes
 - c. yes
2.
 - a. 4
 - b. no
 - c. yes
 - d. yes
3.
 - a. 3
 - b. Sometimes the sides are the same length.
 - c. 3
 - d. Sometimes the corner will be square. Most often the corners are angled.
4.
 - a. 0
 - b. no
 - c. yes
 - d. No, it is not a circle because it is not perfectly round.

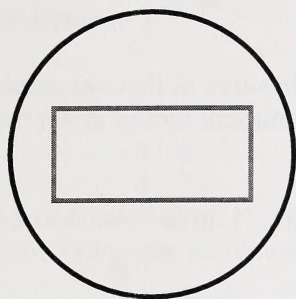
5.



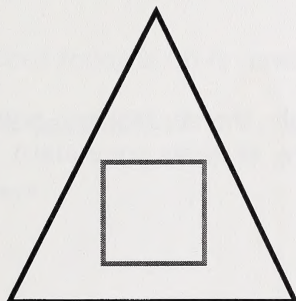
6. a.



b.



c.



d.



There are extension activities for Day 2.

Day 3

Today the student practises making and identifying 2-D shapes.

Day 3: Lesson 1

You will require the 2-D Shapes that you've placed in the Student Folder.

Answers

1. rectangle
2. triangle
3. circle
4. square

Day 3: Lesson 2

The student pretends to be a shape and writes down all the attributes of this shape. Ask the student the following questions. As you ask each one, the student writes down the attribute.

- a. "How many corners do you have?" (The student will print, "I have three corners," or no corners, or four corners, and so on.)
- b. "How many square corners do you have?"
- c. "How many sides do you have?"
- d. "How many sides are equal in length?" (For the rectangle, the student can print, "I have two long sides and two short sides." For the square, all sides are equal.)

Answers

1.
 - a. 4
 - b. 4
 - c. 4
 - d. I have two long sides and two short sides.
2.
 - a. none
 - b. none
 - c. none
 - d. none
3.
 - a. 4
 - b. 4
 - c. 4
 - d. 4
4.
 - a. 3
 - b. sometimes one
 - c. 3
 - d. sometimes three, sometime two, sometimes none

Day 3: Lesson 3

Answers

1. 4 3. 4
2. 8 4. 7

There are extension activities for Day 3.

Day 4

The focus today is on reviewing geometric terms and naming and identifying 2-D shapes.

Day 4: Lesson 1

Answers

1. a. 5
b. 5
c. no
2. a. 6
b. 6
c. no
3. a. 8
b. 8
c. The student may answer that it's the shape of a stop sign.

Day 4: Lesson 2

Help the student realize that the number of sides and corners are always the same. For example, if a shape has three corners, it will have three sides.

Answers

- | | | | |
|---------|---------|---------|----------|
| 1. 4, 4 | 4. 3, 3 | 7. 0, 0 | 10. 6, 6 |
| 2. 5, 5 | 5. 3, 3 | 8. 5, 5 | 11. 4, 4 |
| 3. 8, 8 | 6. 4, 4 | 9. 4, 4 | 12. 4, 4 |

There are extension activities for Day 4. For Activity 2, the student will need straws, pipe cleaners, wooden craft sticks, string, and a coat hanger.

Activity 3 is Geometry Bingo. To play the game, draw a word card. When you call out the shape on the word card, the student covers that shape on the bingo card with a bingo chip or other manipulative.

Have the student do the assignment for Day 5 after completing the day's lesson.

Day 5

The focus today is on making and rearranging patterns using sets of 2-D shapes.

Use the 2-D Shapes for Patterns from the Student Folder.

Day 5: Lesson 1

Have the student make the same pattern Jasper did in one line across the desk, extending the pattern five times. Ensure the student understands that the same shapes are repeated in the same order each time. Then in a second line under the first one, have the student rearrange the shapes into a different pattern. Discuss how different the new line looks, even though the same shapes were used. Ensure the student understands that even though the same shapes were used, the pattern has changed, changing the look.

Answers

1. triangle, square, circle
2. The patterns can be any combination of the three shapes, but different from the first pattern. It looks different because the order is changed.

Day 5: Lesson 2

The student will practise making and rearranging patterns. Have the student make different patterns than the ones shown using the same number of squares.

Have the student do the assignment for Day 5 after completing the day's lessons.

Day 6

The student is introduced to tangrams today.

Day 6: Lesson 1

Give the student the Five-Piece Puzzle from the Student Folder to cut out and reassemble. After the student puts it together, have him or her make a new shape out of the cut pieces.

Day 6: Lesson 2

In this lesson, the student learns about tangrams. A tangram is a puzzle that is divided into seven pieces. Use the Tangram Puzzles in the Student Folder. Instruct the student to cut it out. Ensure the cuts are straight.

You should now have seven pieces. One of the shapes is a parallelogram. This looks like a rectangle but is not a true rectangle because it does not have right angles. Mention the new name to the student, but do not focus on it as this is not something the student needs to know yet.

Answers

1. The shapes the student should list, in any order, are five triangles and one square.
2. triangles
3. 5

There are extension activities for Day 6. The answers to the Tangram Tangles are in the Appendix.

Day 7

The student learns to match and make identical, or congruent, 2-D shapes.

Day 7: Lesson 1

In this lesson, the student will be matching identical (congruent) 2-D shapes. To begin, hand out a variety of 2-D shapes to the student. Ensure that there are at least two of every shape (circles, rectangles, triangles, squares). These can be the cutouts from Day 5. If you do not have enough shapes, trace more onto paper and cut them out.

The student must find the shapes that are identical and then explain why they are identical, or congruent. For example, the rectangles are identical because they have four sides, with two sides longer than the other two sides. Afterwards, the student discovers how to make congruent shapes. This is done by tracing the shape onto another paper and cutting it out.

Answers

1. They fit together perfectly.
2. They fit together perfectly.
3. They fit together perfectly.
4. Other congruent shapes can be made by tracing the shapes on a piece of paper.

Day 7: Lesson 2

The student will make congruent shapes by folding paper. Use the Large 2-D Shapes in the Student Folder, but first cut them out. Have a number of sheets of regular-sized paper available as well. The student will be folding the shapes and paper in half and experimenting with different ways of folding the paper to make two congruent shapes.

Encourage the student to experiment with folding the paper shapes in different ways to make congruent shapes. Allow all types of folds. Discuss with the student the folds that do not produce two congruent shapes and why they don't. The diagrams show a few ways of folding to make congruent shapes. For question 2, ensure that when the student folds the square, the first fold makes a rectangle.

1. a. rectangles
b. They are the same.
c. rectangles
2. a. rectangles
b. squares
c. rectangles
3. a. square
b. rectangle
c. square
d. rectangle
e. They are the same.
4. a. triangles
b. triangles
c. triangles
d. no
e. one
f. triangle
g. They are the same and fit perfectly together.
5. a. They are the same.
b. yes

6. a. They are the same.
- b. No, the triangle has too many odd shapes to be congruent.

Have the student do the assignment for Day 7 after completing the day's lessons.

Day 8

The student is introduced to 3-D solids today.

Day 8: Lesson 1

Have the set of geometric solids including a cube, sphere, cone, cylinder, and pyramid lined up in front of the student. Take one solid at a time and have the student examine it carefully, talk about it, and describe the characteristics of it. Then have the student answer the questions in the lesson for each one. Allow the student enough time to describe the shape of each solid. Accept all names the student gives for it, but give the correct name for it. For example, if the student calls the sphere a ball, accept that, but say that another name for this solid is a sphere. Spend as much time as required to ensure the student has a good grasp of each solid.

Day 8: Lesson 2

Discuss with the student 3-D objects and why they are called that. Ensure the student understands that there are three dimensions, meaning the solid can be measured three ways (length, width, depth).

In the activity, the student identifies the shapes by feel only. Have the student talk about the shape as he or she is feeling it.

Answers

1. The following can be given in any order: sphere, cone, cylinder, cube, and pyramid.
2. a. 3
- b. You can measure it three different ways.

There are extension activities for Day 8. These activities can be done anytime during Days 8 to 11.

Day 9

The student further explores 3-D solids today.

Day 9: Lesson 1

Provide the student with crayons and drawing paper. The student will examine each solid by tracing each of its faces on paper. Have the student figure out a way of ensuring each face of the solid is traced. The student can number each face with chalk or crayon while tracing it.

Answers

1. squares
2. a. 6
b. square
c. yes
3. circles
4. a. 2
b. circles
c. yes
5. The response might be circle.
6. a. no
b. circle
c. It has no faces.
7. circle
8. a. one
b. circle
c. It has only one face.
9. triangles and a square
10. a. 5
b. square, triangles
c. no
d. Four are triangles; one is a square.

Day 9: Lesson 2**Answers**

1. They both have at least one square face.
2. The pyramid has a square face and triangular faces. The cube only has square faces. Also, the pyramid has five faces; the cube has six faces.
3. They both have circular faces.
4. The cone only has one face; the cylinder has two faces.
5. The sphere has no faces while the others each have at least one face.

Have the student do the assignment for Day 9 after completing the day's lessons.

When the student finishes the activities for Day 9, direct him or her to the Student Survey and Student Checklist in the Assignment Booklet. The student may work on these alone or with your help. Go over the responses and discuss them with the student. Give additional instruction as needed to any of the concepts the student has indicated he or she needs help with.

Ensure that you complete the Home Instructor's Evaluation Checklist and Home Instructor's Feedback forms for Days 1 to 9. The Home Instructor's Feedback is to give any information you think may be helpful for the teacher to know.

Submit Assignment Booklet 4A for marking.

ASSIGNMENT BOOKLET 4A

Grade Two Mathematics
Module 4: Days 1–9

Home Instructor's Comments and Questions

Home Instructor's Signature

FOR SCHOOL USE ONLY

Assigned Teacher:

Grading

Mathematics:

Neatness:

Date Assignment Booklet
Received:

FOR HOME INSTRUCTOR USE (if label is missing or incorrect)

Student File Number:

Grading Scale

- A – Very Satisfactory
- B – Satisfactory
- C – Needs Attention
- D – Unsatisfactory

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Teacher's Comments

Teacher's Signature

Home Instructor: Keep this sheet when it is returned to you as a record of the student's progress.

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Module 4

Super Shapes

Assignment Booklet 4A



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Grade Two Mathematics
Module 4: Super Shapes
Assignment Booklet 4A
Learning Technologies Branch

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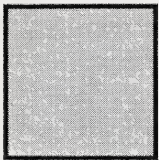

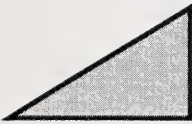


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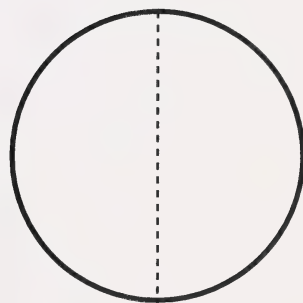
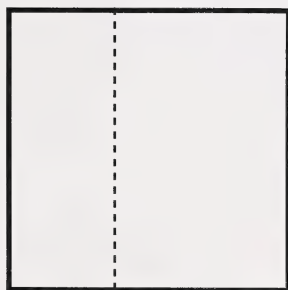
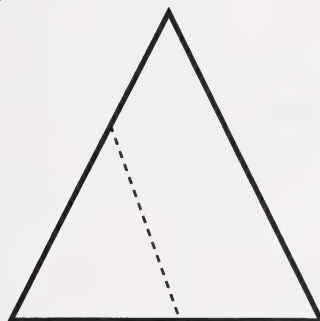
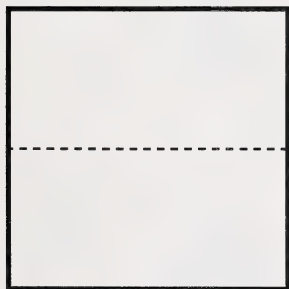
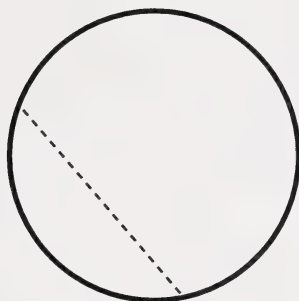
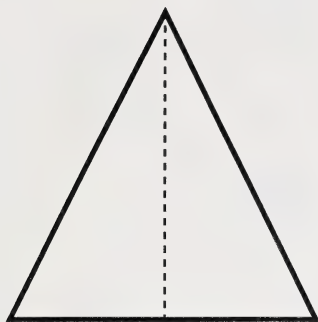
Complete this chart.

Object	Name this shape.	How many sides does it have?	How many corners does it have?
	_____	_____ sides	_____ corners
	_____	_____ sides	_____ corners
	_____	_____ sides	_____ corners
	_____	_____ sides	_____ corners
	_____	_____ sides	_____ corners
	_____	_____ sides	_____ corners



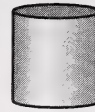
Rearrange the shapes in this pattern. Draw the new pattern.

Put an X on the pictures that are folded into identical (congruent) shapes.



1. Match the solid to its name.

cone



pyramid



sphere



cylinder



cube



2. Draw a picture of an object that is the same shape and write what it is.



Student Checklist

Days 1 to 9

I know how to . . .	Put a check mark beside the things you can do.
1. describe 2-D shapes	
2. describe 3-D solids	
3. make and describe patterns using shapes	

Home Instructor's Evaluation Checklist

Days 1 to 9

Specific Outcomes/ Concepts Learned	Has the student mastered the concept (yes or no)?
The student . . .	
1. can describe the characteristics of 2-D shapes	
2. can describe the characteristics of 3-D solids	
3. can create and describe patterns using 2-D shapes	

Student Survey

Days 1 to 9

Think about what you have learned about shapes and solids in Days 1 to 9. Then answer these questions.

What did you find easy about Days 1 to 9?

List three things you learned about shapes and solids in Days 1 to 9.

Is there something you would like to know more about?

Is there something you still need help with?

.....

Home Instructor's Feedback

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

